Direct Transient Stability Assessment of Stressed Power Systems

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Abstract : This paper discusses the performance of critical trajectory method (CTrj) for power system transient stability analysis under various loading settings and heavy fault condition. The method obtains Controlling Unstable Equilibrium Point (CUEP) which is essential for estimation of power system stability margins. The CUEP is computed by applying the CTrjto the boundary controlling unstable equilibrium point (BCU) method. The Proposed method computes a trajectory on the stability boundary that starts from the exit point and reaches CUEP under certain assumptions. The robustness and effectiveness of the method are demonstrated via six power system models and five loading conditions. As benchmark is used conventional simulation method whereas the performance is compared with and BCU Shadowing method.

Keywords : power system, transient stability, critical trajectory method, energy function method
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